CLAIMS

1. A method of selecting wake-up slots for a plurality of radio frequency identification (RFID) tags which are simultaneously exposed to an interrogation field, each tag including an identification number, the method comprising:

(a) defining a transmission period comprising a plurality of consecutive tag transmission cycles, each transmission cycle including a plurality of discrete wake-up time slots; and

(b) during each transmission cycle, selecting a wake-up slot for each tag based upon a different grouping of consecutive bits of the tag identification numbers, the different grouping being dependent upon the transmission cycle number.

2. A method according to claim 1 wherein the different grouping of consecutive bits progresses sequentially through the bits of the tag identification numbers in a sliding window manner.

3. A method according to claim 1 wherein the number of bits in the grouping is a function of the number of time slots.

4. A method according to claim 1 wherein the bits which define the wake-up slot are inverted on odd transmission cycles.

5. A method of controlling actions of radio frequency identification (RFID) tags, each tag including an identification number, the method comprising:

(a) sending a tag command from an interrogator requesting that a specifically identified tag be placed in a decoupled mode; and

(b) causing tag circuitry to decouple the specifically identified tag from the magnetic environment established by the interrogator if the tag is present within an interrogation field of the interrogator.

6. A method of controlling actions of radio frequency identification (RFID) tags, each tag including an identification number, the method comprising:

(a) sending a tag read request from an interrogator tag reader;

(b) receiving tag response signals from tags within an interrogation zone of the tag reader, the tag response signals including the tag identification numbers; and

(c) sending a first or second command code from the interrogator tag reader to each of the tags which responded to the read request, the first command code causing a tag to perform read or write transactions, and the second command code causing a tag to enter an inactive mode, each command code being individually directed to one of the responding tags.

7. A method according to claim 6 wherein the first and second command codes are calculated from the tag identification number and a tag transmission cycle.

8. A method according to claim 6 wherein the inactive mode is a sleep mode.

9. A method according to claim 6 wherein the inactive mode is a detuned mode, the tag being decoupled from its environment in the detuned mode.

10. A method of controlling actions of radio frequency identification (RFID) tags, the method comprising:

(a) sending a tag command from an interrogator tag reader, the tag command including:

(i) a read request, and

(ii) at least one parameter of the read request; and

(b) a tag receiving a tag command and responding to the read request using the at least one received parameter.

11. A method according to claim 10 wherein the tag includes a read bit, the method further comprising:

(c) setting the read bit to a first logic level to allow the tag to respond to the tag command, or setting the read bit to a second logic level to prevent the tag from responding to the tag command.

12. A method according to claim 11 further comprising:

(d) the reader changing the setting of the read bit from one logic level to another logic level.

13. A method according to claim 11 further comprising:

(d) sending a read bypass command from the tag reader; and

(e) the tag receiving the read bypass command, and if the fast read bit is set to the second logic level, the read bypass command causes the tag to transmit its identification data and enter a processing loop.

14. A method according to claim 10 wherein each tag includes a tag identification number and the tag response in step (b) includes at least the tag identification number.

15. A method according to claim 10 wherein each tag includes a tag identification number and data in a fast read field, and the tag response in step (b) includes at least the tag identification number and the data in the fast read field.

16. A method according to claim 10 wherein the at least one parameter is the communications data rate of the tag reader.

17. A method according to claim 10 wherein the tag responds to the read request in one of a plurality of time slots associated with consecutive transmission cycles, and the at least one parameter is the number of time slots within each transmission cycle.

18. A method according to claim 10 wherein the tag responds to the read request in one of a plurality of time slots associated with consecutive transmission cycles, and the at least one parameter is the maximum number of transmission cycles that the tag is allowed to broadcast in.

19. A method according to claim 10 wherein the tag responds to the read request in one of a plurality of time slots associated with consecutive transmission cycles, and the tag command includes a plurality of parameters of the read request including the communications data rate of the tag reader, the number of time slots within each transmission cycle, and the maximum number of transmission cycles that the tag is allowed to broadcast in.

20. A method of controlling response signals in transponders, each transponder including a sleep identification number formed by a plurality of bits, each transponder having (i) an active mode wherein the transponder broadcasts information in response to a read request broadcast from a tag reader, and (ii) an inactive mode wherein the transponder is inhibited from broadcasting its identification number in response to a read request broadcast from a transponder reader, the transponder responding to the read request during a transmission period comprising a plurality of consecutive tag transmission cycles, the method comprising:

(a) cyclically rotating the bits of the sleep identification number to create a new sleep identification number during each transmission cycle; and

(b) setting the transponder in the inactive mode for one transmission cycle whenever a predetermined bit of each new sleep identification number has a selected logic level.

21. A method according to claim 20 wherein the predetermined bit is the least significant bit.

22. A method according to claim 20 wherein the transponder is a passive resonant radio frequency identification (RFID) tag.

23. A method of controlling response signals in transponders, each transponder including an identification number, each transponder being able to send its identification code after being fully powered on, the method comprising setting a transponder in either (i) a first mode wherein the transponder sends its identification code immediately upon being fully powered on, or (ii) a second mode wherein a fully powered on transponder sends its identification code only after first receiving a read command.

24. A method according to claim 23 wherein the transponder is a passive resonant radio frequency identification (RFID) tag.

25. A method according to claim 23 wherein the transponder includes a talk first mode bit, and the state of the talk first mode bit determines whether the transponder is set in the first mode or the second mode.

26. A method according to claim 6 wherein communication between the tag reader and the tags occur within a transmission period comprising a plurality of consecutive tag transmission cycles, each transmission cycle including a plurality of discrete wake-up time slots, and step (c) is performed for a particular tag immediately following receipt of a tag response signal for the particular tag.

27. A method according to claim 6 wherein communication between the tag reader and the tags occur within a transmission period comprising a plurality of consecutive tag transmission cycles, each transmission cycle including a plurality of discrete wake-up time slots, and step (c) is performed at the end of each transmission cycle for each of the tags which provided response signals in the previous transmission cycle, thereby batch queuing the first or second command codes.

28. A method according to claim 6 wherein communication between the tag reader and the tags occur within a transmission period comprising a plurality of consecutive tag

transmission cycles, each transmission cycle including a plurality of discrete wake-up time slots, and step (c) is performed at the end of the transmission period for each of the tags which provided response signals in the previous transmission period, thereby batch queuing the first or second command codes.